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However, the Navy must provide special language training as well as technical training to prepare these individuals for fleet duty.

The Navy has identified three programs which could provide remedial training to enlisted personnel who speak English as a second language. This report presents training effectiveness and cost data for the Army pilot program conducted at the Defense Language Institute, the Navy pilot program conducted at the English Technical Language School (managed by the Puerto Rico National Guard), and Naval Verbal Skills Curriculum program. Also presented are training track options using one or more of the training programs which were developed based on projected posttest English Language Center scores, costs, and weeks of training.

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COST/BENEFIT EVALUATION OF THREE ENGLISH LANGUAGE TRAINING PROGRAMS FOR POTENTIAL NAVY USE

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Technical Report 134

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TRAINING PROGRAMS FOR POTENTIAL NAVY USE

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Training Analysis and Evaluation Group

October 1982

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SECTION I

INTRODUCTION

The Chief of Naval Operations (CNO) has established a goal of 4.8 percent enlisted Hispanics in the naval force for FY 1986 (CNO, 1982). To meet this goal, the Navy will have to recruit personnel who speak English as a second language (ESL). Consequently, the Navy must provide special language training as well as technical training to prepare these individuals for fleet duty. The identification of effective and efficient means of providing such training is a prerequisite to instituting a language training program in the Navy.

BACKGROUND

The projected decline in the 17-21 year old population by approximately 17 percent through the next decade is expected to have a serious impact on Navy recruiting. The Department of Defense (DOD) has determined that by 1986 the services must recruit one out of every three qualified males to meet operational commitments (Bureau of the Census, 1980). This potential manpower shortage may preclude the achievement of required manning levels unless extreme measures are taken. One potential source of manpower is from minority groups who may lack proficiency in the English language.

In an effort to find ways of using this manpower resource, the services are studying programs which will provide remedial training to enlisted personnel who speak English as a second language. The Navy has identified three programs that have potential for long-term implementation.

The first program is conducted at the English Technical Language School (ETLS) by the Puerto Rico National Guard for newly enlisted Army Guard men and women. Trainees enter this program prior to taking initial entry military training in the Continental United States (CONUS). The Department of the Navy conducted a pilot program of the ETLS for 36 Puerto Rican Navy recruits. The Chief of Naval Education and Training (CNET), in August 1981, tasked the Training Analysis and Evaluation Group (TAEG) to examine the effectiveness of this program for the Navy, to develop a tracking system for Navy recruits attending the pilot program at ETLS, and to provide an economic analysis of the program.¹ A TAEG report on the evaluation of the Puerto Rico Army National Guard (PRARNG) ETLS program is in preparation.

The second program is a U.S. Army program conducted by the Defense Language Institute (DLI) English Language Center (ELC) located at Lackland Air Force Base, San Antonio, Texas. Predicted performance data on students who have received language training at the DLI were obtained by members of TAEG during a visit to the DLI. Further DLI performance data were also obtained from the U.S. Army Training and Doctrine Command, Fort Monroe, Virginia.²

¹CNET ltr N-22 of 26 August 1981.

²Unpublished, Growth in ECLT Scores for Participants in the Lackland Six Month Pilot ESL Program. Data from U.S. Army, Fort Monroe, Virginia.

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The third program is the Navy verbal skills curriculum (VSC) which was implemented at the Recruit Training Command (RTC) Orlando, Florida, and San Diego, California. In November 1980 the TAEG was tasked to conduct a field test of the Navy VSC.³ The results of the field test and a comparative cost analysis were presented in TAEG Technical Report 128 (Kincaid, Swope, Brown, Pereyra, and Thompson, 1982).

Since the TAEG was conducting a field test on the VSC program and evaluating the Navy pilot program at the PRARNG ETLS, CNET tasked the TAEG to evaluate the DLI program.⁴ The task was to conduct a comparative analysis of the three programs to support an implementation decision for training Navy recruits who speak English as a second language. The present report documents this analysis.

PURPOSE

The purpose of this effort is to:

- perform a comparative analysis of the training effectiveness and costs of the Army DLI program, the Puerto Rico National Guard ETLS program, and the Navy VSC program
- make recommendations regarding the most effective and efficient methods for providing language instruction for Navy recruits that speak English as a second language.

ORGANIZATION OF THE REPORT

In addition to this introduction, this report contains four sections and an appendix. Section II describes the English language program conducted by the DLI, the Navy VSC program, and the Navy recruit pilot program conducted at the ETLS by the PRARNG. Section III contains effectiveness and cost data for the DLI, VSC, and ETLS programs. Section IV identifies and evaluates qualitative factors affecting the use of each program and develops feasible training tracks based on projected posttest English Comprehension Level (ECL) scores, costs, and weeks of training. Section V provides recommendations relating to tracking options, testing of recruits using the ECL pretest, and participation with the ETLS at Camp Santiago, Puerto Rico. The appendix provides curriculum information on the DLI, the Navy VSC, and the PRARNG ETLS programs.

³CNET ltr 022 of 25 November 1980.

⁴CNET ltr N-53 of 2 March 1982.

SECTION II

DESCRIPTION OF PROGRAMS

This section describes the English Language Technical School program, the Defense Language Institute English Language Center program, and the Navy Verbal Skills Curriculum program. The description includes information that affects how the Navy would utilize each program. A review of each curriculum is described in the appendix of this report.

ENGLISH TECHNICAL LANGUAGE SCHOOL

The ETLS program was established in 1976 to provide English language training to the PRARNG recruits. The purpose of the school is to reduce the rate of attrition for soldiers taking basic training in CONUS. The 9-week lock-step program is conducted at Camp Santiago, Salinas, Puerto Rico. This facility is managed by the National Guard and serves as the major training facility for the Army National Guard in Puerto Rico.

As a result of a memorandum of understanding between the Deputy Assistant Secretary of the Navy (Manpower) and the Adjutant General PRARNG, a pilot program was implemented in which a group of Navy recruits was selected and sent through the ETLS program prior to beginning recruit training at RTC Orlando.⁵ Except for the use of two Navy petty officers used for administration and Navy counseling, the ETLS instruction program was conducted by National Guard military and civilian personnel during normal training hours. The remaining time was under the supervision of the Navy Company Commanders.

Since Camp Santiago is used for regular weekend training, most of the ETLS facilities including barracks were not available to the ETLS students on weekends. While the PRARNG placed the trainees on weekend pass, the Navy billeted their recruits at the U.S. Naval Station, Roosevelt Roads during the weekend. The retention of the Navy recruits on the weekend caused logistic problems and extended the duty time of the Navy Company Commanders who were temporarily assigned to the ETLS for the pilot program.

More than half of the Navy recruits in the Navy pilot program had scored less than 50 on their ECL pretest prior to entering ETLS. The lock-step 9-week course length was insufficient to provide adequate training for recruits who had these low scores. Fewer than one-third of the recruits had, in fact, attained an ECL score of 70 by the end of the 9 weeks. A minimum score of 70 is considered necessary for success in recruit training (Salas, Kincaid, Ashcroft, 1980). Extensive additional remedial training was required at RTC Orlando for some of these recruits to enable them to complete this training.⁶

⁵Department of the Navy, Memorandum of Understanding, 18 Sep 1981, Office of the Secretary, Washington, DC.

⁶One recommendation resulting from the ETLS study conducted by TAEG is that graduates of the ETLS program be given the opportunity to go through the verbal skills program at RTC Orlando.

Assuming that an improvement of two points a week is possible (most programs generally experience less), then any student who entered the program with less than a 50 ECL score would not be able to attain the minimum score of 70 in a 9-week program. The ETLS program could be successfully used if one of two constraints are placed on the use of the program. The first constraint is to establish an absolute ECL cutoff score of 31 for admission to the ETLS with the understanding that a minimum score of 50 is preferable. Those who score under 50 would be admitted on a case-by-case basis. By admitting only those who score 50 or more on an ECL pretest or those who show potential for success (which must be determined on a highly subjective basis) in the program, then the training at ETLS should provide adequate additional English language skills to allow most to successfully complete recruit training. Additional or remedial training at the RTCs may be required for a number of the recruits. A second constraint is to accept into the ETLS program all recruits who have low ECL scores (31-50) but require them to take follow-on training at either the DLI or through the VSC at the RTCs.

DEFENSE LANGUAGE INSTITUTE

The DLI, located at Lackland Air Force Base, San Antonio, Texas, has both the capability and capacity to undertake English language training for Navy Hispanic recruits. The program is self-paced and individualized and can easily accommodate individuals with a wide range of pre-entry skills. Individual recruits can be enrolled immediately in the program at a point commensurate with their skill level and can be retained until they achieve a specified skill level as measured by an ECL test.

The basic English language curriculum used at DLI is not oriented toward Navy-unique terms, customs, and procedures. A specialized Navy curriculum would require additional development costs and reduce the flexibility to assign students into modules of instruction appropriate to their English language skill levels.

The fundamental need of recruits who do not speak English well is for general English language training. Recruits who attain a level of proficiency in English language skills sufficient to complete basic military training but lack mastery of basic military terms and a Navy orientation would not be at a greater disadvantage when entering basic military training than the typical English speaking recruits. It would appear that DLI instruction time would be more effectively and efficiently used for learning standard English skills.

The DLI is oriented toward English language training with secondary emphasis on military training. The recruits are managed and controlled in a military environment, but the training of basic military skills is secondary. The policy of the school is to minimize the extent to which military training interferes with English language instruction.

An advantage of the DLI is that the entire administrative structure and facilities complex are designed to provide language training. Administrative and support personnel are already in place (including Naval

officers and petty officers), and the additional Navy students can be easily cycled into the program with a minimum of disruption. There is considerable flexibility in the DLI program to accommodate variation in throughput.

VERBAL SKILLS CURRICULUM

The VSC was developed to: (1) improve oral language skills (speaking and listening), (2) teach military vocabulary and terminology needed to successfully complete Navy recruit training, and (3) prepare the individual for follow-on specialized skill training. The Chief of Naval Technical Training contracted with Memphis State University to develop the VSC. The VSC was initially implemented and evaluated at the RTC, Orlando (Brown, 1982;⁷ Kincaid, et al., 1982) and has recently been established at the RTC, San Diego. The results of that evaluation are reported in TAEG Technical Report 128. The evaluation demonstrated that recruits who participated in the field test of the VSC significantly improved their English language skills. Participants in the program had lower attrition rates and fewer setbacks than a group of recruits who had similar English deficiencies. ✓

One potential problem with greatly expanding the VSC program is that the facilities required for the VSC would compete for facilities needed for basic military instruction at the RTCs. It was estimated that two classes could be maintained at Orlando and one class at San Diego on a permanent basis without adversely affecting the present basic military training program. The present capacities of the RTC to handle the VSC may be the limiting factor in determining the maximum number of recruits which could be enrolled in remedial English language training programs. ✓

⁷Brown (1982) assessed the need for verbal language instruction at the three RTCs and concluded that there was no requirement for such training at RTC, Great Lakes.

SECTION III

TRAINING EFFECTIVENESS AND COST OF THE LANGUAGE TRAINING PROGRAMS

This section describes the effectiveness and costs of the three language training programs. The effectiveness and cost data for the VSC program has been documented in a previous TAEG report (Kincaid, et al., 1982). The effectiveness of the ETLS program will be presented in a forthcoming TAEG report. Therefore, the data dealing with these two programs will only be summarized in this section. The effectiveness of the DLI program is more fully discussed in this report.

TRAINING EFFECTIVENESS

DEFENSE LANGUAGE INSTITUTE. The estimated effectiveness of the DLI program was obtained from two sources. The first source was from data published by the DLI on the expected gains in ECL scores for foreign military students. The second source was from the performance of the Puerto Rican Army recruits who participated in the U.S. Army pilot program referred to in section I of this report.

The DLIELC Regulation 50-13 (1982) provides estimates of training time at DLI for foreign military students. These estimates, which are published for program guidance, indicate the estimated time required for foreign military students to increase their language skills to a specified level as measured by an ECL test. Table 1 presents the average weekly gain expected for foreign military students computed from the data given in DLIELC Regulation 50-13. The expected average gain is less than two points per week for foreign military students who score relatively low on an ECL pretest. For those students who enter the program with relatively high pretest scores, it is expected that they will gain approximately one-half point per week. The expected gains per week for the foreign military students are much lower than those experienced by the Puerto Rican Army recruits enrolled in the U.S. Army's English language training project conducted at the DLI. The Army project consisted of 187 recruits who completed a 6-month training program between September 1980 and March 1981.

The progress of the recruits in the Army program was measured approximately every 2 weeks, and changes in the recruit ECL scores were tracked throughout the program. The weekly gains experienced by the Army recruits are shown in table 2. The average weekly gains shown in the table are for 0 to 6 weeks of training, 6 weeks to 12 weeks of training, and, finally, 12 weeks to 26 weeks of training. During the first 6 weeks, regardless of the ECL pretest score, the average gain was more than two points per week. This gain was realized for all recruits although those who scored low on the ECL pretest tended to gain slightly more than two points per week. After 6 weeks, there was a drastic drop in the rate of increase in ECL scores. The average weekly gain beyond 6 weeks was less than one point per week and in many instances considerably less than one point (table 2). The gains experienced in the Army program are generally higher than those shown in

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TABLE 1. EXPECTED AVERAGE WEEKLY GAIN IN ECL SCORE AT THE DLI FOR FOREIGN MILITARY RECRUITS WITH DIFFERENT ECL PRE- AND POSTTEST SCORES*

Pretest Score	Posttest Score				
	60	65	70	75	80
29 or Less	1.73	1.72	1.67	1.56	1.51
30-33	1.51	1.52	1.48	1.30	1.09
34-42	1.44	1.47	1.44	1.41	1.31
43-49	1.03	1.21	1.21	1.17	1.15
50-54	0.62	0.86	1.00	0.96	1.00
55-59	0.27	0.61	0.81	0.82	0.88
60-64	--	0.27	0.57	0.65	0.75
65-69	--	--	--	0.21	0.44
70-74	--	--	--	--	0.29
75-77	--	--	--	--	0.10

*Based on midpoint pretest scores of high school graduates.
Derived from data published in DLIELC Regulation 50-13.

TABLE 2. AVERAGE WEEKLY GAINS IN ECL SCORES ATTAINED BY PUERTO RICO ARMY RECRUITS PARTICIPATING IN THE U.S. ARMY ENGLISH LANGUAGE TRAINING PROJECT AT THE DLI*

Pretest ECL Score	Time in Training		
	0 to 6 Wks	6 to 12 Wks	12 to 26 Wks
0-20	5.06	0.73	0.73
21-30	3.08	1.18	0.71
31-40	2.50	0.90	0.83
41-50	2.47	0.80	0.80
51-60	2.33	0.78	0.49
61-69	2.00	0.27	0.62

*Weekly gains based on midpoint ECL pretest score. Based on unpublished data compiled by the U.S. Army for evaluation of the DLI ESL program.

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table 1 for foreign military DLI students. One possible explanation for this discrepancy is that most DLI foreign students speak Arabic which is far more different from English than is Spanish.

ENGLISH TECHNICAL LANGUAGE SCHOOL AND VERBAL SKILLS CURRICULUM. Data to evaluate the effectiveness of the PRARNG ETLS program were obtained from the TAEG study of that program. A report documenting the results of that study is in preparation. Data to evaluate the effectiveness of the VSC were obtained from the field test of the VSC and details on the effectiveness evaluation can be found in TAEG Technical Report 128.

EFFECTIVENESS SUMMARY. Table 3 summarizes the average weekly gain in the ECL scores for all three programs (DLI, ETLS, VSC). The table does not include the gains expected for recruits who score under 31 on an ECL pretest. Those individuals who score 31 or less on an ECL pretest would need intensive instruction, extending well over a 6-month period, in order to enable them to attain a minimum score of 70 (which is considered necessary for success in basic military training). It is questionable whether such individuals should be considered acceptable for military service.

The weekly gains experienced by the Puerto Rican recruits who participated in the U.S. Army program are expected to be more representative of what would be realized with the Navy Hispanic recruits. Consequently, the DLI gains experienced by the recruits in the U.S. Army program are presented in table 3 for comparison with the other programs.

TABLE 3. AVERAGE WEEKLY ECL GAIN BY PUERTO RICAN MILITARY RECRUITS ENROLLED IN THREE PILOT PROGRAMS FOR ENGLISH LANGUAGE TRAINING

ECL Pretest Score							
Program	31-40	41-50	51-60	61-70	71-80	80+	Mean Weekly Gain*
<u>ETLS</u>							
9 wks	2.1	1.5	1.3	1.0	0.9	0	1.6
N	35	11	19	11	1		
<u>DLI</u>							
0 to 6 wks	2.5	2.5	2.3	2.0	--	--	2.4
6 to 12 wks	0.9	0.8	0.8	0.3	--	--	0.8
12 to 26 wks	0.8	0.8	0.5	0.6	--	--	0.7
N	36	30	25	13	--	--	
<u>VSC</u>							
3 wks	4.5	1.5	2.0	2.2	1.7	1.1	2.0
N	2	2	4	14	7	4	

*Weighted Average

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The ETLS program had a lower average weekly gain than the other two programs; however, it was the longer of the three programs if only the first 6 weeks of the DLI program are considered. The lower ETLS scores may be attributed to the fact that the gain in the last 3 weeks, when the rate of gain was diminishing, tended to pull down the 9-week average. Weekly ECL data were not collected for the ETLS program, so no definite conclusions concerning the validity of this hypothesis can be made.

The VSC appears to be a highly effective program, although the gains, overall, appear to be slightly less than those obtained at DLI. The number of recruits in the VSC program who scored 31-50 on the ECL test was so small (N=4) that meaningful conclusions cannot be drawn.⁸ The evidence for those recruits who scored above 50 indicates the VSC program is more effective than the ETLS program and equally effective as the DLI program.

COST ESTIMATES

The cost data that were compiled to compare the three English language training programs are based on the assumption that the programs would not expand beyond the present capacity of the facilities at each training location.

The ETLS at Camp Santiago can presently accommodate an additional 40 students per class without any expansion of facilities. The cost estimates reflect only the additional costs which would be incurred. If the training at the ETLS were to be expanded to train significantly more than 40 students per class, then additional investment in facilities acquisition or refurbishing would be required and the cost estimates must be revised.

The direct cost estimate for the ETLS program is \$383 per student (table 4). An additional three instructors would be required for the 40 students in order to provide at least a student-to-staff ratio of 15 to 1. The contracted cost of obtaining these instructors was estimated at \$15,000 per year. The average cost for the additional instructors, based on five classes per year of 40 students per class, was \$225 per student.

There are two columns of cost estimates shown for ETLS in table 4. The estimates in column one were derived using data developed from the pilot program and include costs incurred by the Navy to transport the recruits to Roosevelt Roads during the weekends. The estimates in the second column

⁸Since only 33 recruits participated in the VSC pilot study, caution must be exercised in drawing conclusions about any sub-group within the study (e.g., by ECL ranges). Generally, a random sample of 30 or more is considered desirable for making inferences about population parameters. In addition, the VSC was the shortest of the three programs and if the rate of gain begins to diminish early in the program (i.e., after 3 weeks) then the VSC score gains may be biased upward when being compared to the ETLS and DLI score gains.

were derived on the assumption that there would be minimum Navy involvement. The Navy costs of \$200 per student (column two) include the funds necessary to assign an E-5 and E-6, on a permanent basis, to the ETLS staff and sufficient funds for in and out processing of the Navy recruits at Roosevelt Roads.

TABLE 4. AVERAGE COST PER STUDENT FOR THREE ENGLISH LANGUAGE TRAINING PROGRAMS

Item	ETLS		DLI		VSC
Course Length (wks)	9	9*	6	12	3
Direct Cost Per Student	\$ 383	\$ 383	\$ 287	\$ 573	\$ 177
Travel Cost/Student	--	--	300	300	--
Additional Inst. Costs	225	225	427	854	132
Student Salaries (\$155/Wk/Student)	1,395	1,395	930	1,860	478
Navy Support	500	200	**	**	--
Total Cost/Student	<u>\$2,503</u>	<u>\$2,203</u>	<u>\$1,944</u>	<u>\$3,587</u>	<u>\$ 787</u>
Average Cost/Wk/Student	\$ 278	\$ 245	\$ 324	\$ 299	\$ 262

*Minimum Navy involvement

**May involve additional costs which are not included in the cost estimates.

The DLI can accommodate an additional 200 average on board (AOB) without any additional facilities or significant requirements for administrative support. The Navy would be required to pay, to the Air Force, the direct course costs for providing English language training for the Navy recruits. The preliminary cost estimates obtained from the Air Force included an estimate of \$71.20 per student week for instructor costs and \$47.78 per student week for direct costs.⁹ In addition to the above costs, the Navy would incur an estimated \$300 per student for travel to and from the DLI. This would be a one-time cost for both the 6 and 12-week program presented in table 4. Since the DLI is a self-paced, individualized program, it is inappropriate to cost out a fixed length program. However, the cost estimates for the DLI are presented in table 4 for comparison purposes only. Students should exit from the DLI program and be returned to the RTCs when they have achieved a specified ECL score. The length of DLI training will depend to a large extent on the skill level of the recruits when they enter training and the final required level of English language skill as measured by their ECL score. The final skill level to be achieved at the DLI will depend on the follow-on, if any, remedial programs which would be planned for those completing DLI training.

⁹DLIECL ltr, Support Services Division, of 29 July 1982.

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The costs for the DLI program do not include any additional Navy support costs at DLI. There are already a number of Navy personnel assigned to the DLI staff who may be used to provide Navy support for programs implemented at DLI. Costs may need to be adjusted upward if plans for implementation are to include additional Navy personnel assigned to DLI, but there does not appear to be a need for such personnel.

The capacity of the RTCs to accommodate the VSC varies depending upon the AOB of recruits in training. The VSC cost estimates are based upon 45 class convenings per year. The annual throughput would be approximately 650 to 700 students, assuming that the average time in training would be 3 weeks. The direct RTC costs per student were estimated at \$177 for the 3-week course (table 4). Three additional instructors would be required at an estimated annual cost of \$75,000. The instructor costs would be \$132 per student based upon the assumption of 45 class convenings per year with a 15 to 1 student-to-staff ratio.

A comparison of the costs of each program is shown in table 4. The average weekly costs are based upon the stated capacities and throughputs discussed above, and any expansion of the programs above the stated capacities would require additional investment in facilities and equipment. The DLI program may occasionally accommodate more than 200 AOB depending on other DLI training requirements. All programs will require recruits to be eventually transported to the RTC; so travel costs which would be common to all programs were ignored in the costs presented in table 4.

SECTION IV

ALTERNATE TRAINING TRACKS FOR ENGLISH LANGUAGE INSTRUCTION

This section identifies and evaluates alternative training tracks which utilize one or more of the three language training programs (ETLS, DLI, VSC). The identification of feasible tracks for evaluation must consider at least five noncost factors. The first part of this section identifies and discusses those five noncost factors. The second part identifies and evaluates the cost-effectiveness of 14 alternative training tracks.

The three English language training programs evaluated would be technically capable of providing the necessary English language training to enable recruits to attain a specified skill level. However, the constraints placed on the length of the training period, the facility capacities, and other resource factors limit the practical use of each program. Conclusions about the relative training effectiveness of the three English language training programs are difficult to make due to limited observation. However, considering the length of each training program and the performance of recruits who have participated in the programs, uses are suggested for each program which are most appropriate for Navy participation.

NONCOST FACTORS

LENGTH OF PROGRAM. The improvement in the ECL score which can be attained by recruits in the ETLS program is limited because of the fixed length of the program. The ETLS program is limited to 9 weeks, and students with low initial skill levels assigned to that program would require extensive follow-on training. The ETLS program is a feasible track for those students whose initial ECL scores are moderately high.

The DLI program is the most flexible program to accommodate students of varying initial skills because it is self-paced and students could be retained in the program until they have achieved a specified score.

The VSC is basically a 3-week program, but there is considerable flexibility to allow students to exit from the program when they have achieved criterion. With some modifications of the curriculum, the VSC program could be extended to accommodate students having difficulty achieving criterion.

CAPACITIES. The ETLS and VSC are both significantly constrained in terms of the number of students which can be accommodated using present facilities. The approximate maximum annual throughput which can be accommodated at the ETLS is 200, and the maximum for the use of the VSC is between 650-700. The DLI program has more surplus capacity, and the maximum throughput would depend on how long the students must be retained in the program. The present excess capacity at DLI is estimated at 200 AOB and the potential exists for even greater AOB, depending on other DLI training requirements.

LOCATION. Since the ETLS is located in Puerto Rico, it appears most reasonable to utilize that program for Puerto Rican recruits. However, the ETLS program could be expanded and institutionalized as a DOD activity. If that were to occur, then Spanish-speaking students not from Puerto Rico could

be sent there for extensive training. Certain training costs which are lower in Puerto Rico (e.g., instruction costs) may make the long run establishment of such a program in Puerto Rico economically feasible. However, additional travel costs would be incurred for non-Puerto Rican recruits. A more comprehensive cost-effective analysis would be necessary to support a decision to expand the ETLS.

The DLI program is located at Lackland AFB, and any recruit participating in that program would incur travel costs to DLI and then back to the RTCs. The VSC program is located at RTC Orlando and San Diego and can easily be integrated into the basic military training program without additional travel costs or difficulty.

PROGRAM FLEXIBILITY. The ETLS program is most adaptable for training Navy recruits who have already attained an intermediate level of English language proficiency. The program is simply too short to train recruits who have few, if any, English language skills.

The DLI program is a self-paced instructional program which makes it a highly flexible program for accommodating recruits with a wide-range of initial skills. The DLI program would be effective for Navy recruits who need extensive and prolonged instruction.

The VSC program is most effective for a final evaluation and to train recruits who might require some minimal remediation in language skills prior to RTC training. Recruits enrolled in the VSC can: (1) receive Navy-unique instruction, (2) become acclimated to a U.S. military environment, and (3) receive additional English language instruction.

NAVY PARTICIPATION. The Navy recruits (in the ETLS pilot project) were transported to Roosevelt Roads during the weekend and participated in Navy-directed projects. The Army National Guard recruits' were placed on pass during the weekends because most of the ETLS facilities were used by the PRARNG during that period. Since the Navy recruits were not placed on pass, but retained in an environment in which they were directed to use English, one would expect that the gain in the level of English language proficiency would be greater for the Navy recruits than for the PRARNG recruits. A group of Navy recruits were matched with a group of PRARNG recruits on ECL pretest scores. The difference in the mean ECL posttest scores between the Navy and PRARNG for these matched groups was not statistically significant, even though the Navy recruits were retained during the weekends.

There is some advantage in having the recruits under Navy control on weekends. The recruits have an opportunity to become familiar with Navy terms and customs and to participate in Navy-unique activities. However, the basic purpose of the language training program is to improve English proficiency and there was no evidence which indicated that moving the recruits to Roosevelt Roads each weekend improved English proficiency. The trip is difficult, much of which is over relatively narrow roads; it is inconvenient, time consuming, and places an additional requirement on the Navy personnel to supervise the recruits, on a 24-hour basis, during the period in which they are away from the ETLS. Consequently, the value of moving the recruits to Roosevelt Roads is questionable.

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The need for the Navy to participate in any DLI program appears to be minimal and limited to administrative tasks. The DLI program is structured to provide training in basic English language skills, and there should be no requirement for changes in these standard operating procedures (SOP).

The VSC is totally under Navy management control. It is recommended that any specialized Navy curriculum be included in the VSC and not in the ETLS or DLI programs. The VSC should be a bridge between standard English language training and initial entry military training.

TRAINING TRACKS

The initial ECL pretest score and the noncost factors discussed above were used to identify 14 alternative training tracks. Each track represents the use of one or more of the three English language training programs. In general, the ETLS and VSC programs are of insufficient length to be used to fully train recruits who score low on their initial ECL test. The DLI program is the only one which would be long enough to provide the intensive and prolonged instruction necessary to bring low scoring recruits to acceptable levels.

The VSC is the final program in all training tracks and is administered within the ART division of the RTC. The ART provides remedial reading instruction to Navy recruits who do not have sufficient reading or oral language skills to complete recruit training. The remedial reading curriculum is designed to teach reading skills to those recruits identified with a reading grade level of 6.0 or below. Both the VSC and reading curricula utilize Navy vocabulary and military terminology to help the recruit transition from civilian life to the military environment. Because the VSC is a part of the ART program, the tracks identify the estimated amount of time the recruits would spend in ART (which includes both the VSC as well as the remedial reading instruction modules). Although the remedial reading instruction modules were not designed to provide English language training, recruits who participated in the reading program are expected to show gains in English language skills.

The appropriate program(s) depends largely on the initial skill level of the recruit. Alternative training tracks are identified for six initial skill level categories. The following discussion is organized by skill categories. Cost, performance, and other descriptive data for each track are presented in table 5.

- ECL pretest score of less than 31. Training tracks were not identified for recruits who score less than 31. Because of the high cost and length of training it is recommended that recruits who score less than 31 not be accepted for service in the Navy.
- ECL pretest score of 31-40. Four tracks (table 5) are identified for training recruits who score in this category.
 - .. Track A would require an average of 6 weeks at DLI followed by 10 weeks of VSC/ART at the RTCs

TABLE 5. OPTIONAL TRACKS SHOWING PROJECTED COSTS AND ECL GAINS FOR NAVY RECRUITS WITH DIFFERENT ENGLISH APTITUDE

Alternative Track	Pretest ECL Score	ETLS		DLI		VSC/ART		Reading/ART		Max AOB	Projected Posttest ECL Score	Cost Per Student		Total Weeks	
		Wks	Cost	ECL*	Wks	Cost	ECL*	Wks	Cost			Salaries	Course		
31-40															
A				6	1950	15	7	1830	3	790	20	65-75	2500	2100	4600
B				12	3590	22	3	790	2	520	9	65-75	2600	2300	4900
C		9	2500	18	4	1400	10	3	790	2	520	65-75	2800	2400	5200
D		9	2200	18	4	1400	10	3	790	2	520	65-75	2800	2100	4900
41-50															
E				6	1950	15	3	790	2	520	9	65-75	1700	1600	3300
F				10	3040	17	2	520	1	260	5	65-75	2000	1800	3800
G		9	2500	18	3	790	1	260	1	260	7	65-75	2000	1600	3600
H		9	2200	18	3	790	1	260	1	260	7	65-75	2000	1200	3200
51-60															
I				6	1950	15	2	520	1	260	5	65-75	1400	1300	2700
J		9	2500	18	1	260	1	260	1	260	4	65-75	1700	1300	3000
K		9	2200	18	1	260	1	260	1	260	4	65-75	1700	1000	2700
61-70															
L				3	790	1	260	7	-/	-/30	70-75	600	400	1000	4
71-80															
M				2	520	1	260	5	-/	-/30	75-80	500	300	800	3
80+															
N				1	260	-/	-/30	80+	200	100	300	1			

*Gain in ECL Score

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- .. Track B would require an average of 12 weeks at DLI and an additional 5 weeks of VSC/ART at the RTCs
- .. Tracks C and D would consist of 9 weeks at the ETLS and 5 weeks at VSC/ART. Tracks C and D are identical except the Navy involvement in track D would be minimized and the Navy recruits in training would follow the same SOP as the PRARNG recruits.

Track B is recommended for all recruits who score 31-40 on the ECL pretest. The DLI program is the only program which has sufficient flexibility to adapt to the extensive and prolonged training requirements which recruits in this skill range will require. This track is illustrated by figure 1.

- ECL pretest score of 41-50. Four tracks are identified for recruits who score in this category.
 - .. Track E would require an average of 6 weeks of DLI training followed by an average of 5 weeks of VSC/ART training.
 - .. Track F would require an estimated average of 10 weeks at DLI followed by 5 weeks of VSC/ART.
 - .. Tracks G and H would require 9 weeks of ETLS training followed by an average of 4 weeks of VSC/ART. The only difference between tracks G and H is that track H would minimize Navy participation as described previously.

Track H is recommended for Puerto Rican recruits, and the student flow through this track is illustrated by figure 2. Track F is recommended for non-Puerto Rican recruits, and the student flow through this track is illustrated by figure 1.

- ECL pretest score of 51-60. Three tracks are identified for recruits who score in this category.
 - .. Track I would require an estimated average 6 weeks of training at the DLI followed by 3 weeks of VSC/ART training.
 - .. Tracks J and K would require 9 weeks of training at the ETLS followed by 2 weeks of VSC/ART. Tracks J and K are identical except track K would involve minimum Navy participation in the ETLS training phase.

Track K is recommended for Puerto Rican recruits who score in this category. The flow of students through this track is again illustrated by figure 2. Track I is recommended for non-Puerto Rican recruits who score in this category, and the student flow is illustrated in figure 1.

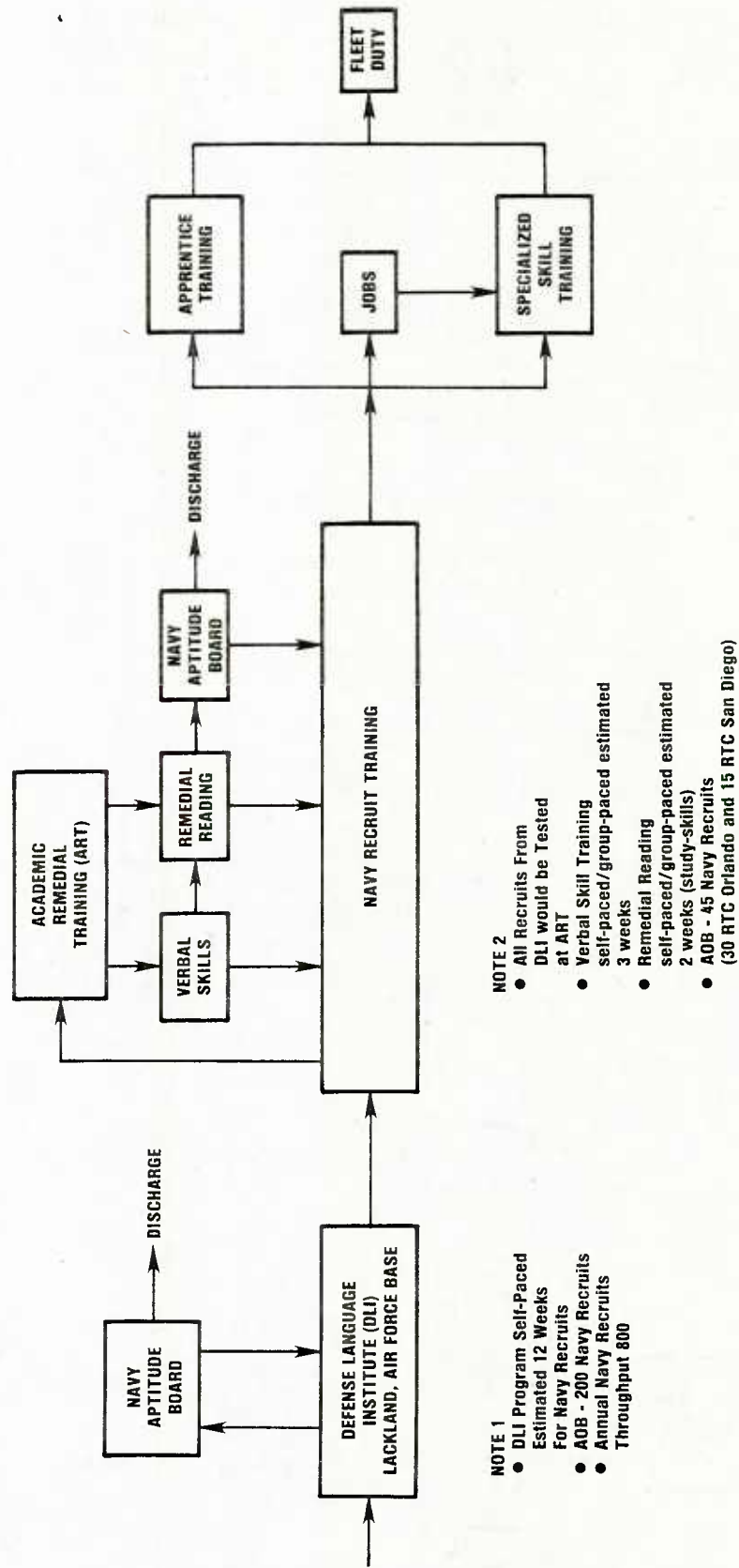


Figure 1. Recommended Training Track For All Navy Recruits Scoring 31-40 on ECL Pretest

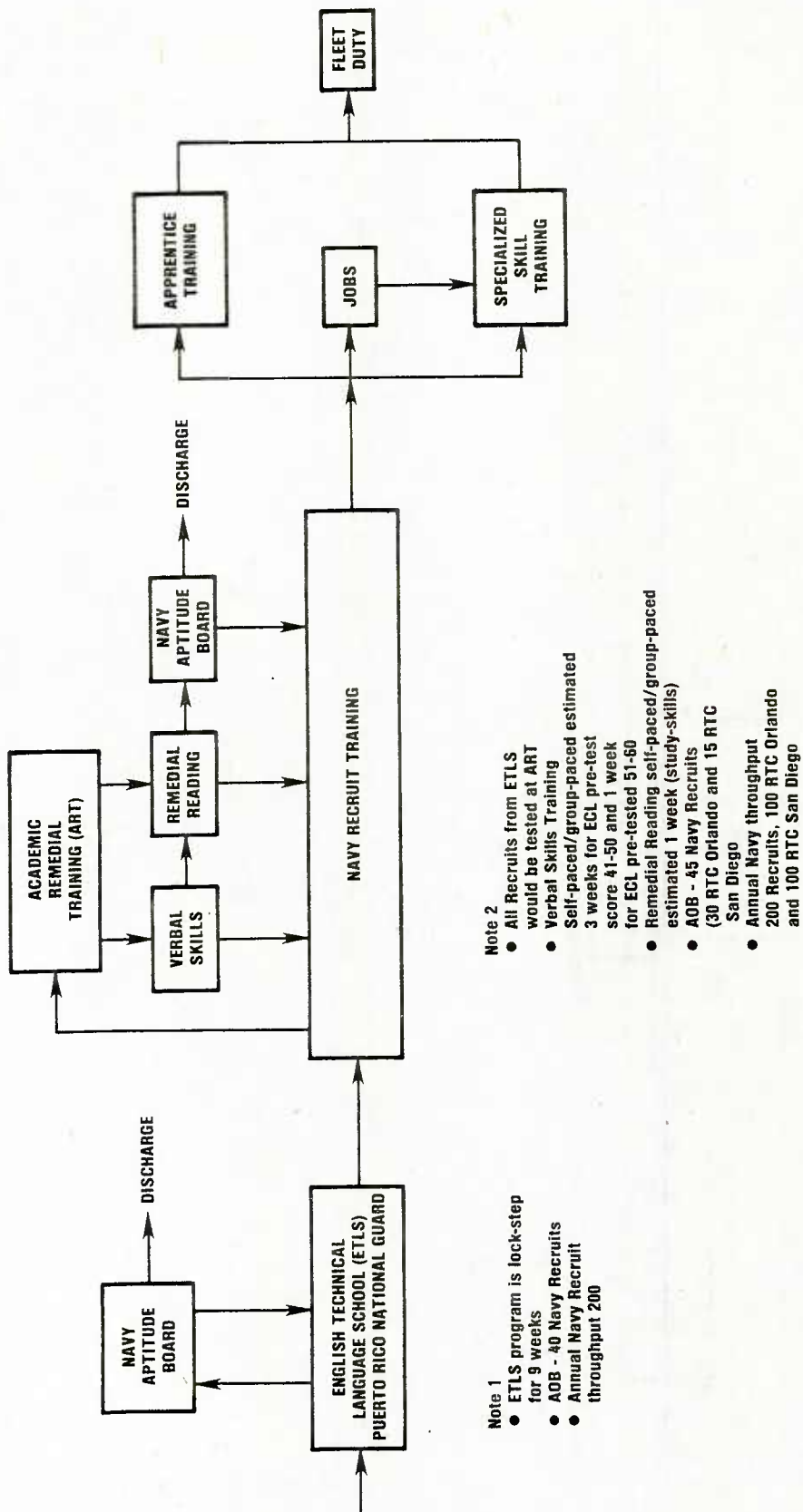


Figure 2. Recommended Training Track for Puerto Rican Navy Recruits Scoring 41-50 and 51-60 on ECL Pretest

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- ECL pretest score above 60. Recruits who score above 60 on the ECL pretest should be sent directly to VSC/ART. Each recruit would be evaluated for English language proficiency and provided an opportunity to acquire the skills considered necessary for success in subsequent military training. Recruits who score above 60 would follow either track L, M, or N depending upon their pretest score (table 5). The latter tracks are similar except for training time. The flow through these tracks is illustrated by figure 3.

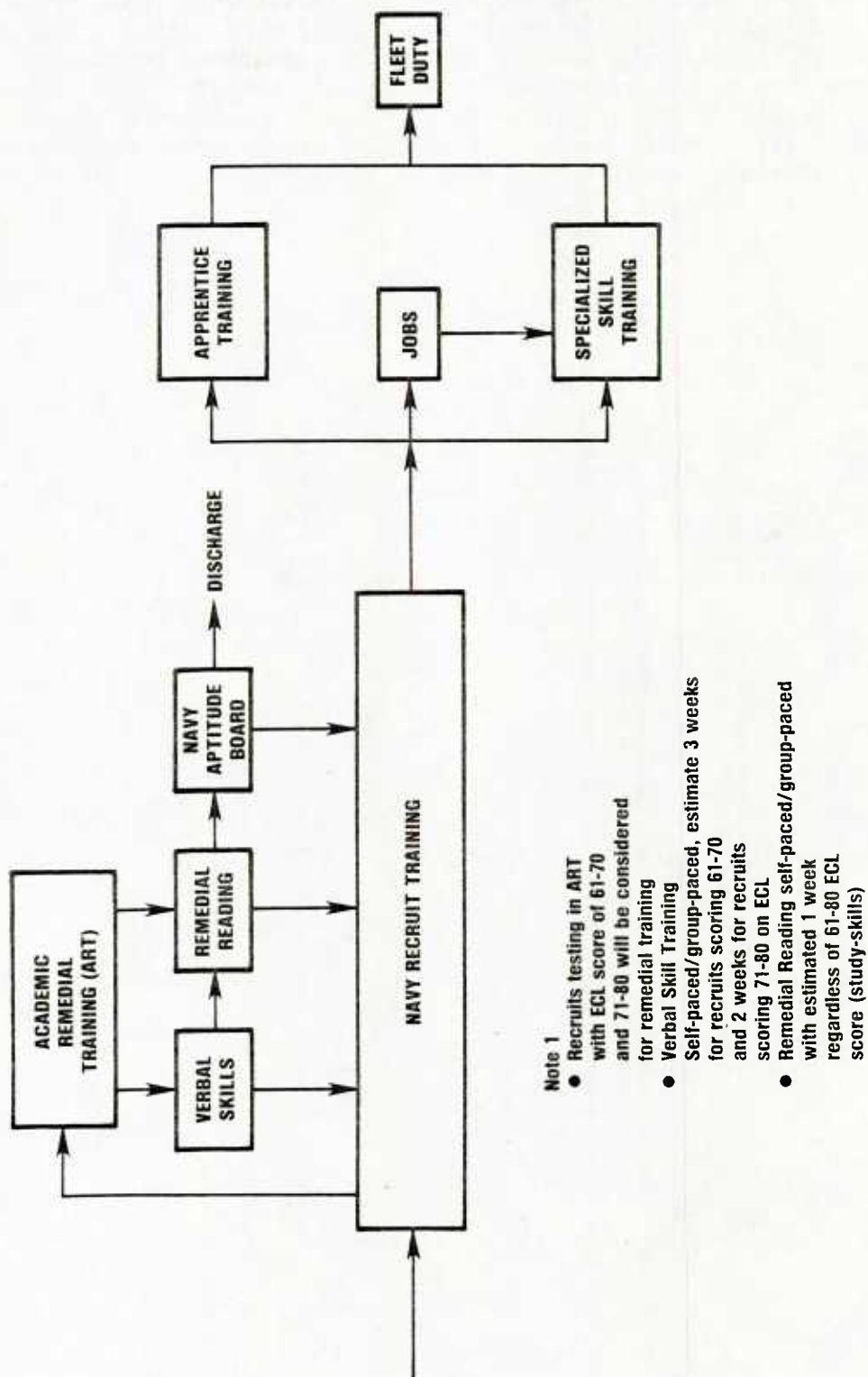


Figure 3. Recommended Training Track for Navy Recruits Scoring 61-70 and 71-80 on ECL Pretest

SECTION V

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Each of the three English language training programs (ETLS, DLI, VSC) were effective in providing remedial English language training to recruits. However, the feasibility of using each program for training Navy recruits is limited, especially in the short run, by limited facility capacity, location, and, perhaps most important, flexibility for training recruits whose initial English language skills may vary over a wide range. Variation in average training costs among the programs was not great. The most important factor which determines total training costs is the level of initial English language skill of recruits when they enter the program. Remedial training for those recruits who score from 31 to 40 on an initial ECL pretest will be approximately \$5,000 per recruit. The cost for training those whose score was less than 31 was not estimated, but it is reasonable to assume the cost would exceed \$5,000. Because of the high cost of training recruits having low English language skills (below 31 on an ECL pretest), it may not be economically desirable to accept them for service in the Navy.

The ETLS is a fixed-length program and would not be well suited for training recruits who need extensive remedial training beyond the present 9-week curriculum. The ETLS program would be well suited for recruits who already possess moderate, although inadequate, English language skills. The DLI has greater flexibility to accept recruits for training whose individual initial skill levels vary over relatively wide ranges. The current limited student capacity at the RTC (San Diego and Orlando), may prevent the expanded use of the VSC/ART program. However, this program is under Navy control and is especially well suited as a final track for testing and providing additional training where necessary, for all recruits who have demonstrated a need for remedial English language training.

A summary of the advantages and disadvantages of the three programs is included in table 6.

RECOMMENDATIONS

1. The English Comprehension Language (ECL) test should be administered to Puerto Rican and other potential Navy recruits that speak English as a second language.
2. The Commander, Navy Recruiting Command should determine the most appropriate activity to administer the ECL test. This determination should include consideration of the Military Entrance Processing Station (MEPS).
3. Potential Navy recruits with an ECL test score of less than 31 should not be accepted for service in the U.S. Navy.
4. Because of special limitations associated with the language training programs, each Navy recruit should be assigned to the language training program which is best suited to accommodate the initial individual language skill of that recruit. The recommended tracks are illustrated in figure 4 and differentiated in the following.

TABLE 6. RELATIVE ADVANTAGES AND DISADVANTAGES OF CURRENT ENGLISH LANGUAGE TRAINING PROGRAMS

	ADVANTAGES	DISADVANTAGES
ETLS (Puerto Rico)	<ul style="list-style-type: none"> • Excellent Staff • Expands Hispanic recruiting opportunities • Benefits Navy image in Caribbean • Relatively low cost 	<ul style="list-style-type: none"> • Available only to Puerto Ricans • Fixed length, lock-step limits flexibility • Present capacity limited to 40 Navy recruits (AOB)
DLI (San Antonio)	<ul style="list-style-type: none"> • Self-paced, flexible curriculum • Highly experienced (program in existence 20 years) • Facilities configured for language training • Flexible in handling varying student loads • Appropriate for all recruits needing ESL training (including low English ability and native speakers of any foreign language) 	<ul style="list-style-type: none"> • Recruits must be transferred after in-processing at RTCs • Curriculum revision potentially expensive
Verbal Skills (RTC's Orlando and San Diego)	<ul style="list-style-type: none"> • In RTC pipeline • Proven effectiveness for recruits of moderate English ability • Self-paced (up to 3 weeks) • Appropriate after DLI or ETLs training • Appropriate for recruits regardless of native language 	<ul style="list-style-type: none"> • Three week program too short for recruits of low English ability • Lengthening of program beyond 3 weeks requires curriculum revision • Large throughput requires capital investment for facilities and additional instructors

ECL Pre-Test	LENGTH OF ENGLISH LANGUAGE TRAINING PROGRAM IN WEEKS																	TOTAL WEEKS	PROJECTED ECL SCORE GAIN	TOTAL COSTS PER STUDENT
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
31 - 40																		17	30	\$4900
41 - 60																		13	23	\$3200
61 - 80																		13	23	\$3800
																		4	6	\$1000

Figure 4. Summary of Optional Tracks Showing Projected Costs and ECL Gains for Navy Recruits With Different English Abilities

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a. All recruits with a score of 31-40 on the initial ECL test should be sent to DLI, Lackland AFB, Texas (see figure 2) and trained until an ECL score of approximately 60 is achieved. (School duration should not be less than 3 weeks or more than 26 weeks.) Following this the recruit would go to RTC Orlando or RTC San Diego, predesignated for VSC/ART at the appropriate RTC (track B, table 5).

b. Puerto Rican Navy recruits with a score of 41-60 on the initial ECL test should be sent to the ETLS, Camp Santiago, Puerto Rico (track H, table 5). Following this they would go to RTC Orlando predesignated for VSC/ART.

c. Non-Puerto Rican recruits with a score of 41-60 on the initial ECL should be enrolled in the DLI and retained until an ECL score of approximately 60 is achieved. Following this training (3 weeks to 26 weeks range) they would go to RTC Orlando or RTC San Diego (tracks F or I, depending on initial score, table 5). These recruits would be predesignated for VSC/ART.

d. All Navy recruits with a score of 61-80 should be sent directly to VSC/ART either at RTC Orlando or RTC San Diego (tracks L, M, N, as appropriate, table 5).

5. The priorities for implementing the recommended tracks are as follows:

a. Highest priority should be given to the immediate implementation of two test programs:

(1) The Navy establish an agreement with the DLI, Lackland AFB, for English language training for Navy recruits. Enroll a class of approximately 40 non-Puerto Rican recruits with a score of 41-60 in the DLI for language training (in accordance with paragraph 4c above). These Navy recruits should start as a group but exit independently from the self-paced DLI program.

(2) The Navy should enlist Puerto Rican personnel with a score of 41-60 and send these recruits to the ETLS. Training would be conducted by the Puerto Rico National Guard (in accordance with paragraph 4b above). The test program should run for 1 year consisting of five 9-week, lock-step classes. The maximum number of Navy recruits for each class should be 40. The program should be initiated by agreement between the Department of the Navy and the National Guard Bureau. The following guidelines pertain to the management of Navy recruits appropriate to implementing the ETLS test program.

- The first class will be monitored and tracked in the same manner as the Navy pilot program. The evaluation will include one onsite visit by the evaluators. Follow-on classes should also be tracked.

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- All Puerto Rican Navy recruits will complete, as required, all phases of VSC/ART at RTC Orlando (in accordance with paragraph 4b above).
- Department of the Navy and National Guard Bureau or the Adjutant General PRARNG should update, as necessary, the Memorandum of Understanding and Interservice Support Agreement for the ETLS pilot program.
- Navy recruits will conform to the SOPs of the ETLS, Camp Santiago, including daily and weekend schedule. The SOP will be followed as long as it does not conflict with United States Navy Regulations (1973) with changes.
- Navy enlisted supervisor/administrative personnel (E-5/E-6) will be assigned to ETLS, Camp Santiago, on PCS orders.

b. Consideration should be given to establishing a training program for recruits with initial ECL test scores of 31 to 40 on the assumption that the program would facilitate EEO goals and objectives and would make it possible for the Navy to draw recruits from a larger reserve pool. It is recommended that this program would consist of a class of 40 recruits, both Puerto Rican and non-Puerto Rican, and that these recruits be sent to DLI (in accordance with paragraph 4a above). The Navy recruits should be tracked in the same manner as recruits participating in the pilot program with the ETLS.

6. The tracking system developed by the TAEG and used in the initial Navy pilot program with PRARNG should be used for monitoring and tracking the performance of Navy recruits involved in English language training programs.

7. The TAEG should be tasked to continue its involvement in the education of these programs and report the results to CNET (paragraphs 4 and 5 above).

8. The Navy should consider tracking the fleet job performance of graduates of language training programs. The current on-line ETLS and RTC computer tracking system should be used by TAEG for this evaluation.

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APPENDIX

DESCRIPTION OF CURRICULA FOR
ENGLISH LANGUAGE TRAINING PROGRAMS

**DEFENSE LANGUAGE INSTITUTE
ENGLISH LANGUAGE CENTER
LACKLAND AFB, SAN ANTONIO, TX**

PURPOSE

The Defense Language Institute curriculum is designed to prepare students, primarily foreign military personnel seeking specialized technical training in a particular military occupation, with sufficient English language skills to complete follow-on training. It emphasizes general English language skills (reading, writing, speaking, and listening) rather than military terminology. It is designed to help the student achieve a minimum score of about 70 on the English Comprehension Level (ECL) test, usually considered the minimum necessary to successfully complete the follow-on training. Students are placed in the program at a point commensurate with their English language skill. The program is designed for entering students ranging widely in English language ability, from virtually no knowledge of the language to intermediate fluency.

TIME REQUIRED

Self-paced with flexible entry and exit:

Minimum: 3 weeks

Maximum: 6 months

PHASES

The DLI curriculum is composed of five phases which represent specific skill levels as measured by the ECL test.

1. Preelementary Phase--designed to acquaint students with English letters, sounds, and words so that their familiarity enables them to effectively learn the Elementary Phase.
2. Elementary Phase--designed for students with little or no knowledge of English, ECL scores of 0-40. Limited vocabulary and basic patterns of English are systematically developed.
3. Intermediate Phase--designed for students who have completed the Elementary Phase or have obtained ECL scores of 40-65. Basic English structures are reinforced and a greatly expanded vocabulary is provided.
4. Advanced Phase--designed for students who have completed the Intermediate Phase or who have obtained an ECL score of 65 or above. The principal emphasis is on vocabulary expansion.
5. Specialized Phase--designed for students who have completed the Intermediate/Advanced Phase or its equivalent and already have a good knowledge of general English. It emphasizes the technical terminology of a particular military occupational specialty such as flying, ordnance, or electronics.

**LITERACY SKILLS CURRICULUM
(MODULE OF ACADEMIC REMEDIAL TRAINING)
RTCs, ORLANDO, SAN DIEGO, GREAT LAKES**

PURPOSE

The literacy skills curriculum is designed to remediate the reading skills of recruits reading at a grade equivalent of less than 7.0. It is designed to help the recruit meet the academic demands of training.

TIME REQUIRED

Reading modules: 1 to 6 weeks depending upon the individual

Study skills module: 1 to 2 weeks depending upon the individual.

MODULES

The literacy skills curriculum is composed of two modules which represent different components of reading and studying skills.

1. Reading

a. Decoding

(1) Phonetic analysis--upon completing this component, the student will be able to recognize and discriminate language sounds which are represented by consonants, vowels, digraphs, and diphthongs.

(2) Structural analysis--upon completing this component, the student will be able to decode unfamiliar words by applying syllabication rules to affixes, compound words and multisyllable words.

b. Vocabulary--the student will recognize the meaning of a variety of intermediate level terms using context, root words, and Navy-relevant terms.

c. Comprehension

(1) Literal: the student will answer questions based on a specific reference found within a short passage.

(2) Inferential: the student will draw conclusions, make inferences, and apply generalizations which require more information than is explicitly stated in the passage read.

d. Reading rate: no specific goal or objective for remedial instruction; the student is encouraged to develop a reading rate that permits understanding the implications and meaning of what was read.

2. Study Skills: specific units of instruction based on the Bluejackets' Manual or Basic Military Requirements. The student is taught studying techniques:

- underlining, outlining, skimming, and scanning
- note taking and test taking.

**VERBAL SKILLS CURRICULUM
(MODULE OF ACADEMIC REMEDIAL TRAINING)
RTCs, ORLANDO AND SAN DIEGO**

PURPOSE

The verbal skills curriculum is designed to remediate communication skills of speaking and listening. It is primarily intended for recruits who speak English as a second language. It is designed to help the student complete academic and military training.

TIME REQUIRED

Total program: 54 hours of instruction

Individual lessons: between 1 and 2 hours.

MODULES

1. Navy Vocabulary. Upon completion of this module, the student will be able to recognize and/or define verbally in English the meanings of selected Navy-relevant words that are represented in a verbal context.

2. Grammatical Structures. Upon completion of this module, the student will be able to understand, distinguish between, and produce orally in English pronouns and their appropriate referents, plural and possessive forms of nouns, active and passive forms of selected verbs, and various verb tenses.

3. Language Fluency. Upon completion of this module, the student will be able to listen to informational passages read or discussed orally and produce the appropriate response in English that relates the literal and inferential context of the passages.

**ENGLISH TECHNICAL LANGUAGE SCHOOL
CAMP SANTIAGO, PUERTO RICO**

PURPOSE

The English Technical Language School (ETLS) curriculum is designed to increase the English language skills of Puerto Rican natives who enlist in the Army National Guard but do not have sufficient English language proficiency to complete Army initial entry training conducted in CONUS. The ETLS curriculum is designed to increase English oral-aural comprehension skills. The program stresses both Army vocabulary and general English.

TIME REQUIRED

Nine weeks of group instruction.

PHASES

The ETLS curriculum is designed in two phases.

1. Elementary--designed to emphasize basic grammatical structures and vocabulary. Students learn to orally convey vocabulary meanings, format yes-no and wh-questions, and have a listening comprehension of grammatical structures. The student is expected to reproduce the oral language in writing.

2. Intermediate--designed to emphasize vocabulary and grammatical structures. Students are to orally reproduce the vocabulary and grammar correctly, be capable of independent comprehension of elementary reading material, have a vocabulary adequate and appropriate for military and civilian settings, be able to understand and respond to meaningful conversation, and independently produce grammatically and logically sound written sentences.

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